Science and Technology

Subject: ADSL NMS Release 1.0 Turnover Evaluation

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Memorandum

The following memorandum details the current state of Release 1.0 implementation of the ADSL Network Management System (ADSL NMS) developed to support the · _   . roll out in the BellSouth region. A brief description of the development and testing process is given along with a summary of the system test results. Open problems are categorized and any work-arounds are described.

1.0 Summary of Development and Testing Process

The ADSL NMS was developed in close cooperation with the Advanced Networking Division (AND) of the Product Commercialization Unit (PCU) and representatives from the Data Customer Support Center (DCSC) over the course of the last year. Detailed requirements were captured and baselined in the "ADSL NMS Requirements - Release 1" document originally released in .   and re-issued in   to reflect changes to the service and network architecture brought on by the adoption of an industrial business model. Formal requirements reviews were held where customer feedback was incorporated into the requirements.

Design and development was driven solely from the documented Release 1 requirements. Formal design reviews and code inspections were held periodically throughout the process. Module testing was performed before integrating functionality into the system. Prior to entering system test, all requirements were implemented and functional, and the code was placed under source code control. Any changes to the code after entering system test was driven by individual trouble reports.

ADSL NMS Release 1 functionality encompasses the features specified in the R1 Requirements. R1 development is being implemented with one major release (R1.0) and two point releases as specified by the "ADSL NMS R1 Software Development Plan". Release 1.0 contains most of the R1 functionality with the major exception being support for Remote DSLAMs. Remote DSLAM support is provided in Release 1.1. Release 1.2 is planned as a Y2K compliance release that may include support for the Mini-RAM based on vendor availability and project needs.

System test for the ADSL NMS was performed by an independent group of engineers that had not participated in the development process. The "ADSL NMS - System Test Strategy and Plan - Issue 1.0" outlines the testing strategy employed for Release 1 System Test. The test strategy document was formally reviewed along with all Release 1 test cases. Customer participation was encouraged for test case reviews as well as solicited for participation in the system testing activity. Test cases were based on the documented requirements and 100% coverage was achieved. Over 300 test cases that covered all functional areas of the Release 1 ADSL NMS were written, reviewed, and executed successfully.

2.0 System Test Results

Detailed system test results are contained in the accompanying "ADSL NMS System Test Results" document. In summary, there were 363 tests written that cover all functional areas of the ADSL NMS. 96% of those test have been executed sucessfully, with only 15 remaining in the blocked state. The majority of blocked tests are due to the inability to simulate low-level interface tests such as X.25 protocol manipulation or tests that exercise R2.0 functionality. There are no blocked tests outstanding that are a result of failed test scenarios. Please refer to the System Test Results document for a more detailed description of the blocked tests.

In the course of system testing there were 150 distinct trouble reports written. 29 of these reports were generated un-necessarily and closed with no action taken. Of the remaining 121 reports, 103 were fixed and resolved completely in the final load.

Table 1: Defect Resolution

Total Reported Defects	Closed No Action	Fixed	Postponed/Open
150	29	103	18

Of the 103 defects fixed completely, 13 were classified as critical, 39 were classified as major, and 51 were classified as minor.

Table 2: Fixed Defect Breakdown

Total Fixed Defects	Critical	Major	Minor
103	13	39	51

The remaining 18 defects were postponed till a later release for complete resolution. Of these 18 postponed defects, none were classified as critical, 9 were classified as major, 8 were classified as minor, and one was classified as a vendor enhancement.

Table 3: Postponed/Open Defect Breakdown

Total Postponed/Open Defects	Critical	Major	Minor	Enhancement
18	0	9	8	1

Of these 9 major defects, only three do not have an automatic, seamless workaround already in place in the final load. All of the major defects that have been postponed will be addressed in detail in the following section. All of the minor problems that have been postponed are cosmetic in nature or have a very low probability of occurrence.

PRIVATE   **2 of 7**
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3.0 Postponed/Open Defects

The following sections categorize the open problems and denote whether a current workaround or fix is in place. The defects that have a viable workaround are shown for completeness and to trigger follow-up work when vendor fixes or time becomes available.

3.1 Known Major Defects Without Work-Around Solutions in Place

OSI Platform

SNTzs13887 - Selecting empty items in drill down screens causes client GUI to exit
- This is an intermittent problem that OSI is currently working a fix for. Solution is to restart client GUI, and to only drill down in populated table entries. This problem has not been seen in the last several weeks of testing.

NMS Application

SNTzs14329 - Provisioning actions suspend indefinitely if underlying EMS fails
- This problem occurs if the AWS crashes after a TL1 command has been issued and the NMS is waiting on a response. Time-out values need to be added to several commands to prevent this. The effect of this happening is that the command suspends and the user has to exit out of the screen and re-issue the command. This will be fixed in the next maintenance or point release. This has a relatively low probability of happening.

SNTzs14248 - Method needed to monitor Navigator Server failure
- The BellSouth Navigator Server which runs on the Interface Gateway does not report all troubles back to the client program. A method needs to be developed to monitor the Navigator log files and automatically cause a restart if trouble conditions are noticed. If the Navigator server runs into trouble, under the current configuration, the trouble will go un-noticed until the Navigator administrators get an alarm when we do not respond to service order transmittals. This has only happened once during testing.

3.2 Known Major Defects With Work-Around Solutions in Place

OSI Platform

SNTzs14349 - Client license manager looses track of available licenses
- The OSI license manager will occasionally not account for a returned license when a user exits from the GUI client. Over time, the available licenses will run out. This can be easily corrected in a manner that is seamless to logged-on users by restarting the license manager periodically. We currently have a script in the crontab to do this every 30 minutes. OSI is working on a fix to this problem.

SNTzs13194 - VA call sequence race condition
- Occasionally the user will have to double click on a GUI item to select it. OSI has provided a fix for this problem and it will be included in the next maintenance or point release.

SNTzs13222 - Cannot programmatically control size of window when it opens
- The application developer can not control the window size the user is presented when first opening a screen. This often requires the user to resize the window to see all of the information. This only occurs the first time a user opens a particular window. The server remembers the correct size for all subsequent actions on that window. OSI has accepted defect into their enhancements process and will be providing a fix in the September time-frame. NMS will schedule this fix for the next point

PRIVATE   **3 of 7**
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release.

Alcatel Platform

SNTzs14294 - Removing DSLAM LT card does not generate an alert

- The current Alcatel field load (3.0) does not mark the corresponding TL1 alert message as SA (service affecting) when you pull an LT card from the DSLAM. This is a known Alcatel problem and a fix is available in the 3.1 release. We have currently relaxed our rules to accommodate this scenario so that the appropriate alerts will get recognized and propagated. After Alcatel 3.1 deployment NMS will revert back to previous rules in order to distinguish SA versus NSA messages.

SNTzs13365 - Alcatel ADSL gear in busy state after every state change

- The current Alcatel field load (3.0) synchronizes the AWS database after every DSLAM command that alters the AWS database. This causes un-acceptable performance during provisioning sequences because the synchronization can take up to a minute if the AWS is heavily loaded. Alcatel has implemented a method to batch a series of provisioning commands to eliminate the synchronization in the middle of a provisioning sequence. This allows provisioning sequences to complete, return control to the NMS, and then synchronize the AWS database off-line. Alcatel has implemented this enhancement request in the 3.1 release. NMS will incorporate the necessary modifications to make use of this capability in the next point release. The only immediate effects are slightly longer provisioning times until the fix is implemented.

NMS Application

SNTzs14344 - Disconnect PVC after Deny leaves ADSL port OOS

- If a disconnect is issued while a deny service is in effect, the ADSL port remains in an out-of-service state after the disconnect is processed. NMS has implemented a workaround that disallows the disconnect and displays a message to the user that service must first be restored and then a disconnect can be issued. However, the correct solution is to allow the disconnect and then put the port in the IS state. This will be fixed in the next point release. The only immediate effect is an additional step to restore the port before the disconnect is processed. This fix touches some much used code and the NMS development team did not feel comfortable changing it in the time-frame available after the trouble was reported.

SNTzs13808 - Security management not fully implemented

- There is a general requirement to provide security management for the NMS in Release 1. NMS has not implemented all of the required features due to their complexity and the unclear needs of the user at this point. NMS has implemented several categories of "user" that restricts certain functions and tries to target specific work items to a category of user. We will continue to evaluate security requirements and mature this area as the user better understands their needs based on how the work evolves and partitions over time.

4.0 Recommendation

At this time, it is my belief that the Release 1.0 implementation of the ADSL NMS is of sufficient quality to deploy and meets or exceeds the requirements specified in the "ADSL NMS Release 1 Requirements". The system has been thoroughly tested and there are no open problems that prohibit the immediate deployment of the system. It does not pose a danger to the safety of the network or to the BellSouth brand. With customer concurrence, I recommend that the system be moved into the production environment upon completion of the final software load scheduled for

PRIVATE   **4 of 7**
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APPENDIX A: Major Postponed/Open Defects Known at Turnover

SNTzs13808 P 2 Security management not fully implemented.

SNTzs14344 P 2 Disconnect PVC after DENY left AdslPort 'Out-of-Service'.

SNTzs14294 P 2 Removing DSLAM LT card does not generate an alert

SNTzs13194 P 2 VA call sequence race condition

SNTzs13222 P 2 Cannot programatically control size of window when it opens.

SNTzs14349 P 2 Client license manager looses track of available licenses.

SNTzs13887 P 2 Selecting empty items in drill down screens causes client GUI to exit.

SNTzs14329 P 2 Provisioning actions suspend indefinitely if underlying EMS fails.

SNTzs14248 P 2 Method needed to monitor Navigator Server failure.

SNTzs13365 P 4 Alcatel ADSL gear in busy state after every state change (Vendor Enhancement)

*Taken from DDTS project "services:nms.r1".

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A - 6

APPENDIX B: Minor Postponed/Open Defects Known at Turnover

SNTzs13931 P 3 NC, Drill-Dn of ATM switch gives non-standard message, when vacant.

SNTzs13939 P 3 Incorrect Alert : ALL RESOURCES BUSY, when VCI is less than 32

SNTzs13945 P 3 NC, NMS does not give "NSP Contact Name Omitted" message.

SNTzs13916 P 3 NMS should not allow to edit COSMOS racks when Plink exist on them

SNTzs14293 P 3 PcDnaService object has wrong info about which order it belongs

SNTzs14295 P 3 Incomplete alert: STMNGAMNAT1-1-*-* has no physical link

SNTzs13955 P 3 AWS object name can be used for DSLAM

SNTzs14142 P 3 Purging of log files based on dates/months is not available.

*Taken from DDTS project "services:nms.rl".

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